campaign to subvert the provisions that Professor Woroch analyzes, as their successful efforts to inhibit uniform TELRIC pricing have demonstrated.

F. The WEFA Group

225. The WEFA group has carried out a study of the effect of BellSouth control over a long-distance subsidiary serving BellSouth's own customers.[41] The study suggests that there are substantial economic benefits from that control in comparison to reliance on competition among carriers not controlled by BellSouth. The study assumes, implicitly, that BellSouth will create a new long-distance subsidiary under its control, though I understand that some of the Bells propose to enter by reselling long-distance service of existing carriers, so the primary issue appears to be the Bell's control. In summary, WEFA concludes the following about the comparison: long-distance prices would fall by 5 percent per year over the next 5 years, productivity gains in the use of information services would rise by two percent per year over the same period, and labor participation rates would rise by 0.5 percent over the next 10 years because of the increased use of telecommuting.

226. WEFA's evidence about long-distance prices is defective and does not support the proposition that the creation of a long-distance subsidiary serving South Carolina customers under the control of BellSouth would result in anything like a 25 percent cumulative effect on prices. The study uses the same faulty measures of price—standard prices and the CPI—as the other BellSouth experts. As I explained in Part IV, the actual prices customers pay for long-distance services have declined dramatically, especially recently, and can be expected to decline even more in the near future, as both access charges and other costs continue to decline and productivity continues to rise. The data in Figures 2 and 3 of the WEFA study suggesting price *increases* are completely out of touch with reality.

227. WEFA's implicit analysis is that prices have risen while costs have declined—a symptom of lessening competition—and that the creation of a long-distance reseller under BellSouth's control would jolt the market into full

[41] The WEFA Group, "The Economic Impact of BellSouth's Entry into InterLATA Long Distance Markets in South Carolina," March 1997.

competition. In fact, prices have fallen dramatically as costs have fallen. As Part IV showed, long distance shows all the signs of being a workably competitive industry. Furthermore, the evidence I reviewed earlier about SNET's role in its long-distance market hardly support the proposition that a local carrier will push prices downward by offering customers bargains. Rather, local telephone companies tend to price their products at the high end in all the markets they participate in, including long distance where permitted. WEFA's projection of a 25 percent effect of BellSouth's control over a long-distance subsidiary finds no support either in economic theory nor in the actual performance of telephone markets.

228. According to WEFA, productivity in the use of information services will improve as a result of the proposed change in long distance.[42] But their discussion of the sources of this improvement focuses exclusively on the Internet. It is likely, in my opinion, that the Internet will add to productivity as it matures. But the Internet has little to do with long-distance telephone service of the type that would be offered by BellSouth's proposed subsidiary. Essentially all access to the Internet is through the local network. The efficiency of the Internet derives from its use of broadband packet switching. The transport of Internet messages and files over long distances is already handled in a cheap and efficient way. It would be an overstatement for WEFA to suggest that BellSouth could make significant improvements in that area, and, in fact, the study does not make that claim. WEFA makes only vague assertions that the proposed role of BellSouth in long distance will increase productivity in the usage of information services by 2 percent per year. Nowhere does the study explain how productivity will be enhanced.

229. The controversial issue today with respect to the telephone system and the Internet is in local access. The Internet has expanded rapidly under a regime of zero access charges to users. Because access does involve costs, the efficient access charge is not zero, but a level reflecting cost. But, the Bells' record hardly supports the conclusion that they are encouraging more rapid penetration of Internet usage. The Bells have failed to redesign their networks to permit highly efficient access. According to Paul Misener, manager of telecommunications at

[42] *Ibid.*, pp. 11-14.

Intel, "Rather than meeting the demand for Internet access, the phone companies want to suppress it by applying a surcharge."[43]

230. WEFA's third conclusion is that increased competition in the long-distance market will lead to increased telecommuting which will lead, in turn, to a 0.5 percent increase in the labor participation rate.[44] Yet, the benefits to telecommuting that WEFA attributes to competition in the long-distance market will most likely arise from increased competition in the local and intraLATA markets. As in Internet access, most telecommuting involves local and intraLATA telephone calls. The interchange of computer data for telecommuting takes place over packet-switched networks, not through regular long-distance service of the type that BellSouth proposes to resell.

231. In my opinion, the WEFA Study has no scientific value. Nothing in the study helps us understand how the price of long distance would be affected by BellSouth's creation of a long-distance subsidiary. And the study makes laughable errors in attributing improvements in productivity in areas where long-distance service in fact plays no role. To achieve the productivity benefits identified in the WEFA study, we need to bring more competition to local service.

VII. Conclusions

232. I can find no benefit from BellSouth's control of a long-distance subsidiary other than to BellSouth itself. The company will be able to obtain a substantial market share in South Carolina's long-distance market because of its ability to hobble its long-distance rivals. In addition, it will have the advantage of facing the true cost of access, which is less than the access charge paid by its rivals, though, as I explained earlier, this advantage is tempered by the opportunity cost when BellSouth takes a call away from a rival who depends on BellSouth for access. The result will be a reduction in competition in long distance and higher

[43] "Access Providers, Baby Bells Fighting Over Internet Wealth," *The New York Times CyberTimes,* November 25, 1996.

[44] *The WEFA Study,* pp. 14 and 15.

prices to the long-distance consumer. Further, BellSouth's presence in long distance would lower incentives for entry of independent local carriers and inhibit the development of local competition. Local telephone prices would be higher as a result.

233. The Telecommunications Act relies on the principle of structural separation until there is sufficient local competition that the principle is no longer needed. This principle imposes a limitation on the Bells—that there may be no joint operation of local and long-distance service. I believe that the principle of structural separation is a sound one under current and near-future conditions, from the point of view of the welfare of the U.S. consumer. Structural separation does *not* reduce the number of sellers in the long-distance market. Nor does structural separation decrease consumer welfare.

234. I believe that consumers benefit from continued structural separation of local service and long distance. Contrary to BellSouth's experts' view, I believe that structural separation remains a valid principle for governing the telephone industry as long as there is not competition based on irreversible investment in local telephone service for all groups of customers.

235. Many discussions of the economic effects of permitting local telephone companies to control long-distance subsidiaries presume that another long-distance seller will improve competition and lower the price of long-distance services. The primary reason to be skeptical of this presumption is the evidence presented in Part IV showing the advanced degree of competition in the long-distance market. What could a local telephone company do that companies already in nationwide operation have not already done?

VIII. About the Author

236. I serve as Professor of Economics at Stanford University and also Senior Fellow at Stanford's Hoover Institution. I received a Ph.D. in economics from the Massachusetts Institute of Technology in 1967. I have been elected a fellow of the American Academy of Arts and Sciences and a fellow of the Econometric Society. I have published 7 books and numerous articles in several areas of

applied economics. I have extensive experience in the economics of telecommunications, computers, and software. Recently I served as an expert for the Department of Justice in its case against Microsoft and in its opposition to Microsoft's proposed merger with Intuit. Further information about my professional activities is in my *curriculum vitae*, which is appended to this declaration.

I declare, under penalty of perjury, that the foregoing is true and correct, to the best of my knowledge and belief.

Executed on October 19, 1997.

Robert E. Hall

Robert E. Hall

June 1997

CURRICULUM VITAE

Robert E. Hall
Hoover Institution
Stanford University
Stanford, California 94305
(415) 723-2215
Fax: 725-7320
Email: Hall@Hoover.Stanford.EDU

Born August 13, 1943, Palo Alto, California
Social Security Number: 559-60-0891

PhD in economics, MIT, 1967; BA in economics, University of California, Berkeley, 1964

Senior Fellow, Hoover Institution, and Professor, Department of Economics, Stanford University, since 1978

Previously Professor of Economics, MIT (1974-78), Associate Professor of Economics, MIT (1970-74), Acting Associate Professor of Economics, University of California, Berkeley (1969-70), Assistant Professor (1967-69)

Fellow, American Academy of Arts and Sciences
Fellow, Econometric Society

Director, Research Program on Economic Fluctuations, National Bureau of Economic Research, since 1977
Member, Advisory Committee, Congressional Budget Office, since 1993
Member, Oversight Panel for Economics, National Science Foundation, 1989, and Advisory Panel for Economics, 1970-72
Member, Yale University Council Committee on Social Sciences—Policy, 1989-94
Member or Senior Advisor, Brookings Panel on Economic Activity, since 1970
Member, President's Advisory Committee on Productivity, 1981-82

Books

Booms and Recessions in a Noisy Economy, Arthur Okun Memorial Lectures, Yale University Press, New Haven, Connecticut, 1991.
The Rational Consumer: Theory and Evidence, MIT Press, Cambridge, Massachusetts, 1990.
Macroeconomics (with John Taylor), W.W. Norton, 1986. Second edition, 1988. Third edition, 1991. Fourth edition, 1993. Fifth edition, 1997.
Economics (with Marc Lieberman) South-Western, 1997 (forthcoming)
The Flat Tax (with Alvin Rabushka), Hoover Press, 1985. Second edition, 1995.
Low Tax, Simple Tax, Flat Tax (with Alvin Rabushka), McGraw-Hill, 1983.
Inflation: Causes and Effects, University of Chicago Press for the National Bureau of Economic Research, 1982 (editor).

Selected Articles

"Irving Fisher's Self-Stabilizing Money." *American Economic Review, Papers and Proceedings,* May 1997.

"Levels of Economic Activity Across Countries" (with Charles I. Jones). *American Economic Review, Papers and Proceedings,* May 1997

"Potential Disruption from the Move to a Consumption Tax," *American Economic Review, Papers and Proceedings*, May 1997

"The Productivity of Nations" National Bureau of Economic Research Working Paper 5812, November 1996 (with Charles I. Jones)

"Macroeconomic Fluctuations and the Allocation of Time," *Journal of Labor Economics*, January 1997.

"Putting the Flat Tax into Action" (with Alvin Rabushka)," in *Fairness & Efficiency in the Flat Tax,* AEI press, 1996, pp.3-41.

"The Effects of Tax Reform on Prices and Asset Values," in *Tax Policy and the Economy*, National Bureau of Economic Research, James Poterba (ed.), vol. 10, MIT Press, 1996, pp. 71-88.

"Robert Lucas, Recipient of the 1995 Nobel Memorial Prize in Economics," *Scandinavian Journal of Economics,* vol. 98, number 1, pp. 33-48, 1996.

"Productivity and the Density of Economic Activity" (with Antonio Ciccone), *American Economic Review,* March 1996, pp. 54-70.

"Lost Jobs" *Brookings Papers on Economic Activity* 1995:1, pp. 221-256

"Reference Guide on Estimation of Economic Losses in Damages Awards" (with Victoria A. Lazear), *Reference Manual on Scientific Evidence*, Washington: Federal Judicial Center, 1994.

"Nominal Income Targeting" (with N. Gregory Mankiw) in *Monetary Policy*, National Bureau of Economic Research, Studies in Business Cycles, N. Gregory Mankiw (ed.), vol. 29, University of Chicago Press, 1994, pp. 71-93.

"The Value and Performance of U.S. Corporations"(with Bronwyn H. Hall), *Brookings Papers on Economic Activity*, 1:1993.

"Labor Demand, Labor Supply, and Employment Volatility," *NBER Macroeconomics Annual*, 1991, pp. 17-46.

"Substitution over Time in Consumption and Work" in L. McKenzie and S. Zamagni (eds.), *Value and Capital Fifty Years Later,* MacMillan, 1991, pp. 239-267.

"Invariance Properties of Solow's Productivity Residual" in Peter Diamond (ed.), *Growth/ Productivity/Unemployment: Essays to Celebrate Bob Solow's Birthday*, MIT Press, pp. 71-112,1990.

"The Relation between Price and Marginal Cost in U.S. Industry," *Journal of Political Economy,* October 1988, pp. 921-947.

"Market Structure and Macroeconomic Fluctuations," *Brookings Papers on Economic Activity,* 1986:2, pp. 285-322.

"Intertemporal Substitution in Consumption," *Journal of Political Economy*, vol. 96, no. 2, April 1988, pp. 339-357.

"The Excess Sensitivity of Layoffs and Quits to Demand" (with Edward Lazear), *Journal of Labor Economics*, vol. 2, no. 2, 1984, pp. 233-257.

"Optimal Fiduciary Monetary Systems," *Journal of Monetary Economics*, vol. 12, no. 1, July 1983, pp. 33-50.

"The Importance of Lifetime Jobs in the U.S. Economy," *American Economic Review*, September 1982, pp. 716-724.

"The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households" (with Frederic Mishkin), *Econometrica,* vol. 50, no. 2, March 1982, pp. 461-481.

"Employment Fluctuations and Wage Rigidity," *Brookings Papers on Economic Activity*, 1:1980, pp. 91-123.

"Labor Supply and Aggregate Fluctuations" in *Carnegie-Rochester Conference Series on Public Policy*, vol. 12, 1980, pp. 7-33.

"Efficient Wage Bargains under Uncertain Supply and Demand" (with David Lilien), *American Economic Review,* December 1979, pp.868-879.

"A Theory of the Natural Unemployment Rate and the Duration of Employment," *Journal of Monetary Economics*, vol. 5, April 1979, pp. 1-17.

"Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence," *Journal of Political Economy*, vol. 86, December 1978, pp. 971-987.

"The Rigidity of Wages and the Persistence of Unemployment," *Brookings Papers on Economic Activity*, 2:1975, pp. 301-349.

"Estimation and Inference in Nonlinear Structural Models" (with E. Berndt, B. Hall, and J. Hausman), *Annals of Economic and Social Measurement*, 3/4, 1974, pp. 653-665.

"The Specification of Technology with Several Kinds of Output," *Journal of Political Economy*, 81, July-August 1973, pp. 878-892.

"Wages, Income, and Hours of Work in the U.S. Labor Force" in H. Watts and G. Cain, *Income Maintenance and Labor Supply: Econometric Studies*, Rand McNally, 1973, pp. 102-162.

"Turnover in the Labor Force," *Brookings Papers on Economic Activity*, 3:1972, pp. 709-756.

"The Dynamic Effects of Fiscal Policy in an Economy with Foresight," *Review of Economic Studies*, 38, April 1971, pp. 229-244.

"Prospects for Shifting the Phillips Curve through Manpower Policy," *Brookings Papers on Economic Activity*, 3:1971, pp. 659-701.

"The Measurement of Quality Change from Vintage Price Data" in Zvi Griliches (ed.), *Price Indexes and Quality Change*, Harvard University Press, 1971, pp. 240-271.

"Why Is the Unemployment Rate So High at Full Employment?" *Brookings Papers on Economic Activity*, 3:1970, pp. 369-410.

"Tax Policy and Investment Behavior: Reply and Further Results" (with D. W. Jorgenson), *American Economic Review*, 59, June 1969, pp. 388-401.

"Consumption Taxes versus Income Taxes: Implications for Economic Growth," in *Proceedings of the 61st Annual Conference on Taxation*, National Tax Association, 1968, pp. 125-145.

"Technical Change and Capital from the Point of View of the Dual," *Review of Economic Studies*, 35, January 1968, pp. 35-46.

"Tax Policy and Investment Behavior" (with Dale W. Jorgenson), *American Economic Review*, 57, June 1967, pp. 391-414.